MJI
Media Jurnal Informatika
Vol. 17, No. 1a, September 205
p-issn : 2088-2114, e-issn : 2477-2542

Web-Based Extracurricular Activity Management Information System (Case Study: SMA Negeri 1 Mande)

Fietri Setiawati Sulaeman[a,1,*], Siti Nazilah [b,2], Mohamad Kany Legiawan [b,3,], Nabillah Fira Yamin Hasibuan [b,4]

[a] Suryakancana University, Pasir Gede Raya, Cianjur 43216, Indonesia
[b] Suryakancana University, Pasir Gede Raya, Cianjur 43216, Indonesia
[1] fietrisetiawati@gmail.com*; [2] zilah.nazilah@gmail.com; [3] kany@unsur.ac.id; [4] nabillahfira24@gmail.com
* Fietri Setiawati Sulaeman

ARTICLE INFO

Article history
Received : 2025/09/05
Revised : 2025/09/26
Accepted :2025/09/28

Keywords
SMA Negeri 1 Mande Cianjur
Management
Extracurricular Activities
Laravel Framework

ABSTRACT

ABSTRACT

The advancement of information technology continues to grow in line with increasing societal needs, particularly in the era of globalization. Various sectors such as transportation, communication, healthcare, and education demonstrate that technology has become an essential part of daily life. One significant application of this technology is the use of web-based information systems, which can enhance data processing speed, support decision-making, and save both time and cost. SMA Negeri 1 Mande, located in Mande District, Cianjur Regency, still manages extracurricular activities manually. This has led to various problems, including errors in recording new member data, activity scheduling, attendance tracking, achievement documentation, submission of permission letters, and funding requests. In addition, data retrieval is often difficult due to damaged or disorganized documents. Competition announcements are still delivered verbally, and communication between students and extracurricular advisors is not optimally facilitated. This study aims to develop a Web-Based Extracurricular Activity Management Information System using the PHP programming language and the Laravel framework. The system is designed to automate processes such as member registration, data management, activity scheduling, attendance recording and reporting, and online submission of letters. Communication features such as live chat and discussion forums are also provided to support interaction between supervisors and members. The results of this study produced an information system that improves the efficiency and effectiveness of extracurricular activity management and can be integrated with the school's operational needs. Based on the testing results, the system accelerated the registration process by up to 60% and attendance recording by 50% compared to manual methods.

1. Introduction

The development of information technology goes hand in hand with the increasing needs of society in various aspects of life. In the era of globalization, technology facilitates activities in transportation, communication, healthcare, and education. Web-based information systems have become effective solutions

for accelerating data processing, supporting decision-making, and saving time and costs, thereby improving work efficiency and the overall quality of life [1]

SMA Negeri 1 Mande, located in the Mande District of Cianjur Regency, is a senior high school under the supervision of the Ministry of Education and Culture. Established in 2006, the school provides a conducive learning environment that enables students to participate effectively in the learning process and engage comfortably with others. SMA Negeri 1 Mande is also equipped with modern and adequate facilities, including outdoor sports amenities. Currently, the school offers two main study programs: Natural Sciences (IPA) and Social Sciences (IPS).

Extracurricular activities are non-academic programs conducted within the educational environment. These activities offer students opportunities to explore and develop their interests and talents [2]. The main goal of extracurricular programs is to encourage students to enhance their non-academic abilities. Participation in such activities also supports the formation of more creative learning patterns, helping to foster and increase students' creativity. Due to limited instructional time during regular school hours, not all activities can be conducted in the classroom. Therefore, extracurricular activities are held outside regular class hours to accommodate students' interests and talents [3].

At SMA Negeri 1 Mande, the management of extracurricular activity data is still carried out manually and has not yet been computerized. This has led to several challenges, such as errors in recording new member registrations, managing membership data, scheduling activities, attendance tracking and monthly reports, recording achievements, submitting permission letters, and requesting funding for each extracurricular group. In addition, data retrieval is often problematic due to damaged or hard-to-find documents.

Information about competitions or other events is still delivered verbally, which carries the risk of miscommunication. Moreover, interaction between members and extracurricular supervisors remains suboptimal, often resulting in ineffective discussions and coordination. This condition may lead to errors in decision-making and hinder the smooth execution of extracurricular programs.[4]

Poor information delivery, disorganized data management, and the accumulation of unmanaged physical documents are some of the current issues. To address these challenges, a web-based information system is needed. Websites function to execute or transfer user request files through communication protocols [5], making them ideal for supporting extracurricular activity management and facilitating the dissemination of information.

This system is designed to automate various processes, such as new member registration, member data management, activity scheduling, attendance recording, and automated attendance recap. In addition, the system provides online features for submitting permission letters and funding requests, making coordination between extracurricular supervisors and members more efficient. To support communication, the system includes a discussion forum and features such as live chat and group messaging, allowing supervisors and members to exchange information related to activities, competitions, and important announcements within the SMA Negeri 1 Mande community.[6]

2. Method

2.1 Type and Approach of Research

"The research method used in this study involves observation and interviews, with the subjects consisting of student affairs staff and extracurricular advisors at SMA Negeri 1 Mande. The development of the web-based application was carried out using the System Development Life Cycle (SDLC) method with the Waterfall model approach." [7]

2.2 Object and Scope of Research

Considering the author's limitations, the scope of this study is restricted to the following points:

1. The system is intended for use only by internal parties at SMA Negeri 1 Mande, including student affairs staff, students, administrative staff, and extracurricular activity advisors.
2. The system only manages extracurricular activities officially registered at SMA Negeri 1 Mande. Activities conducted outside the school are not covered by the system.

3. The system's main functions are limited to handling requests for dispensation letters and fund applications.
4. Students are only allowed to register for one extracurricular activity.
5. System features include registration of extracurricular members, member attendance, schedule management, member data management, achievement tracking, fund request management, income and expense tracking for each extracurricular activity, interaction with advisors via WhatsApp chat, attendance recap, submission of dispensation letters, and information management related to extracurricular activities at SMA Negeri 1 Mande.
6. The system is designed to facilitate the management of extracurricular activities at SMA Negeri 1 Mande in a web-based platform.
7. The application is developed using the Laravel framework with PHP as the programming language and MySQL as the database system.

2.3 Data Collection Techniques

This research was conducted through direct observation and in-depth interviews at SMA Negeri 1 Mande. The researcher employed a purposive sampling technique by selecting key informants to obtain comprehensive data. These informants included one representative from the Student Affairs Department (as the policymaker and highest person in charge of student/extracurricular data) and two to three Extracurricular Activity Supervisors who were chosen based on their high activity level and complex data management challenges. The goal was to gain detailed insights into daily problems related to managing members, schedules, attendance, and recording achievements. The output of this activity was the acquisition of crucial datasets, covering student data, activity data, membership, supervisors, dispensation letters, and extracurricular schedules.

2.4 Tools and Materials Used

Software analysis aims to identify the necessary software required by the computer to ensure the system operates effectively. The following are the software specifications needed to support the Extracurricular Application:

a. XAMPP: A software package that provides a local server environment to support the development of web-based applications.
b. Visual Studio Code: An advanced text editor used for writing, editing, and debugging application source code.
c. MySQL: A relational database management system used to store, manage, and access application data.
d. Browser: Software used to access web pages and display information from the internet as needed.
e. Visual Paradigm: A modeling software utilized to design the system's structure and workflow visually.

2.5 Research Procedures or Stages

This study adopts the Waterfall software development model, consisting of five main stages as outlined by [8] : Communication, Planning, Modeling, Construction, and Deployment.

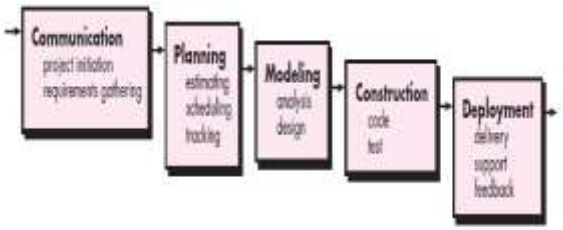

Figure1. Model Waterfall

a. Communication

This is the initial process in which communication is established with the institution to identify existing problems and needs, and to propose appropriate solutions. In this study, communication was carried out through interviews and direct observation at SMA Negeri 1 Mande.

b. *Planning*
This stage involves system planning aimed at managing all extracurricular activities. The planning includes features such as member registration, attendance recording, activity scheduling, member data and achievement management, funding requests, and communication between members and supervisors through live chat. The system is also designed to recap attendance data, manage permission letters, and deliver information related to extracurricular activities, ensuring that all processes run according to plan [9]

c. *Modelling*
This phase includes system design and development to support extracurricular management. The system architecture is modeled using Unified Modeling Language (UML) diagrams, serving as a visual modeling tool for object-oriented system design. UML helps visualize system requirements and functions in a structured manner [10]. The system is developed as a web-based application using the Laravel framework, an open-source PHP web application framework. Laravel provides a variety of features and tools that simplify web development, including routing, database management, templating, and more [11]. The system is also supported by a MySQL database, which efficiently stores and manages data. MySQL is a relational database management system that organizes data into separate tables, allowing for faster and more efficient data manipulation. It can handle databases ranging from small to very large in scale [12].

d. *Construction*
The development of the extracurricular management system at SMA Negeri 1 Mande is carried out using PHP, a server-side scripting language designed for web development. PHP was created in 1995 by Rasmus Lerdorf and is processed on the server side [13]. The system also uses the Laravel framework to streamline application development. To ensure the system functions as expected, black box testing is employed. Black box testing focuses on evaluating the system's functionality without considering its internal structure. The test assesses the system's input and output from a user perspective, helping to detect weaknesses or flaws that can then be improved [14].

e. *Deployment*
The Deployment stage is the process of delivering the completed application to the school administration at SMA Negeri 1 Mande. During this phase, the school provides feedback and suggestions that are valuable for evaluating and improving the extracurricular activity management system.[15]

2.6 Data Analysis Techniques

Data analysis in this study was conducted through interviews and observations. The results of the interviews can be found in Appendices I and II. This analysis led to the identification of patterns and the collection of information related to potential issues faced by extracurricular activities. These issues were then further analyzed to determine appropriate and optimal solutions. The following are several key datasets (master data) that were collected:

a. Student Data – Used to identify students who are participating in extracurricular activities.
b. Advisor Data – Provides information on the individuals responsible for supervising each extracurricular activity.
c. Management Data – Contains details on the organizational structure and personnel managing each extracurricular group.
d. Extracurricular Activity Data – Includes comprehensive information on all extracurricular programs available at SMA Negeri 1 Mande.
e. Member Attendance Data – Used to track the attendance of members participating in extracurricular activities.

3. Results and Discussion

3.1 Presentation of Research Results

At SMA Negeri 1 Mande, the management of extracurricular activity data is still conducted manually and has not yet been computerized. This situation increases the likelihood of errors in record-keeping, particularly in processes such as new member registration, management of member and supervisor data, activity scheduling, attendance tracking, and monthly attendance recap. Similar issues also arise in recording achievements, submitting permission letters, requesting activity funds, and financial management. Difficulties in data access and frequent document damage further complicate the situation. In addition, information dissemination—such as competition announcements—is still done verbally, making it prone to

misunderstandings or being overlooked. The lack of a dedicated communication platform between members and supervisors also hampers coordination, potentially leading to misinformation and document buildup.Descriptive statistics (mean, standard deviation, etc.)

3.2 Analysis of Findings

The extracurricular management system is designed to overcome challenges and simplify processes such as member registration and attendance tracking. The main functions of this system include online registration, digital attendance, submission of permission letters, and a live chat feature to facilitate communication. The extracurricular management system for registration and attendance involves a complex and integrated process with four main user roles:

1. Students
   As the primary users, students participate in extracurricular activities. They need access to register, view schedules, and obtain information related to their extracurricular activities.
2. Student Affairs Staff (Kesiswaan)
   The student affairs division is responsible for managing the system, ensuring smooth operation, and maintaining data accuracy. They have full access to various system modules, including the management of extracurricular activities.
3. Supervisors (Pembina)
   Supervisors are teachers in charge of overseeing extracurricular activities. They are responsible for managing member and committee data, as well as recording and summarizing attendance.
4. Administrative Staff (Tata Usaha)
   The administrative staff handles the official documentation and correspondence related to extracurricular activities.

As the next step in modeling the system being developed, the author designed a Use Case Diagram, which is one of the diagram types in Unified Modeling Language (UML) used to visualize the interaction between actors and the system. The diagram below presents the Use Case Diagram for the Extracurricular Activity Management Information System at SMA Negeri 1 Mande..

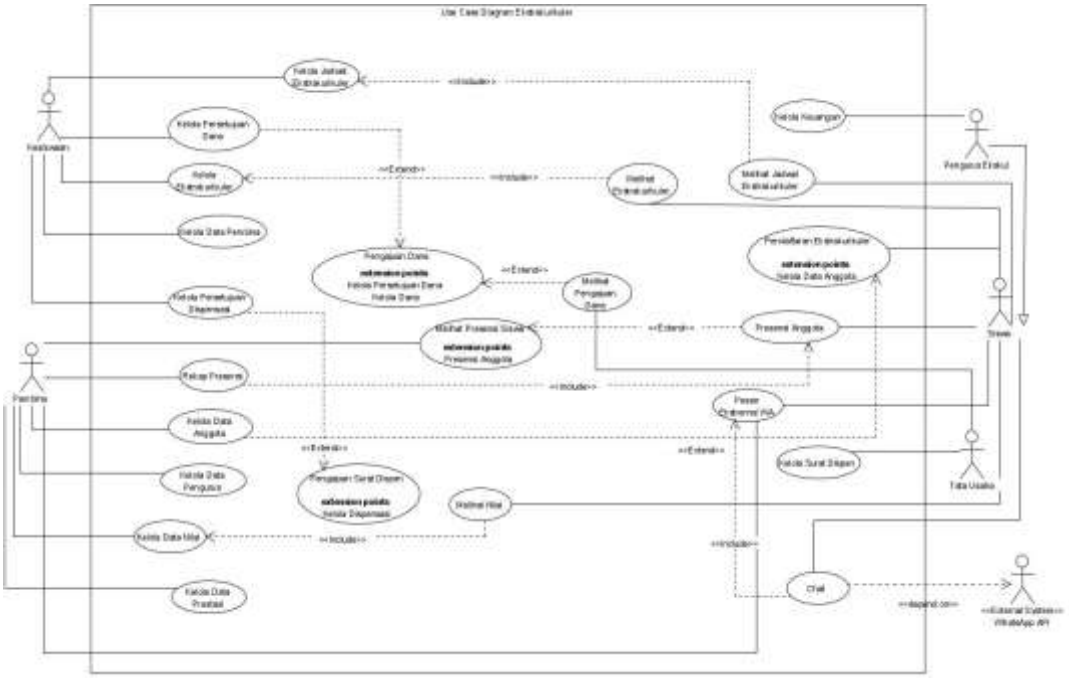

Figure 2. *Use Case* Extracurricular Activity Management System

The system design was carried out using Unified Modeling Language (UML) as a tool for visualizing, planning, and developing the intended system. The system analysis stages using UML include the creation of a Class Diagram, User Interface, Entity Relationship Diagram, and Deployment Diagram.

"The class diagram illustrates the structure of the Web-Based Information System for Managing Extracurricular Activities, based on a case study conducted at SMA Negeri 1 Mande.

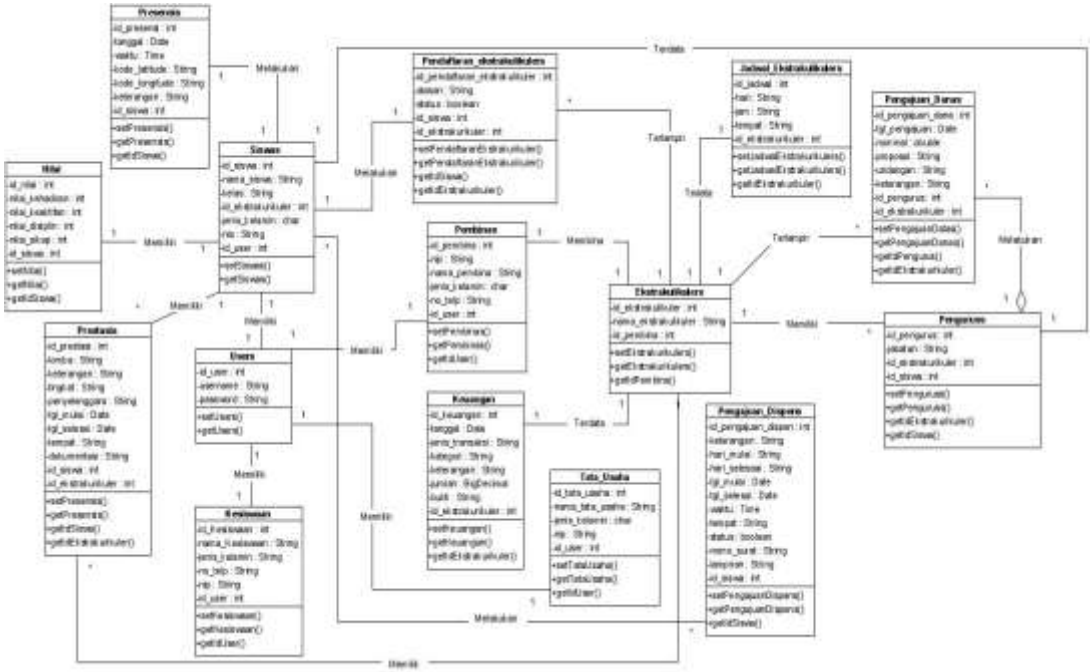

Figure 3. Extracurricular Activities Management

3.3 Implications of the Results

After completing the creation of process flow diagrams and data modeling using class diagrams, the next stage is the implementation of the extracurricular activity management system. This system is developed using the Laravel framework, supported by MySQL as the database technology.

The implementation of the Web-Based Extracurricular Activity Management System interface consists of five main processes, which are presented in the following sections.

a) Member Registration Interface

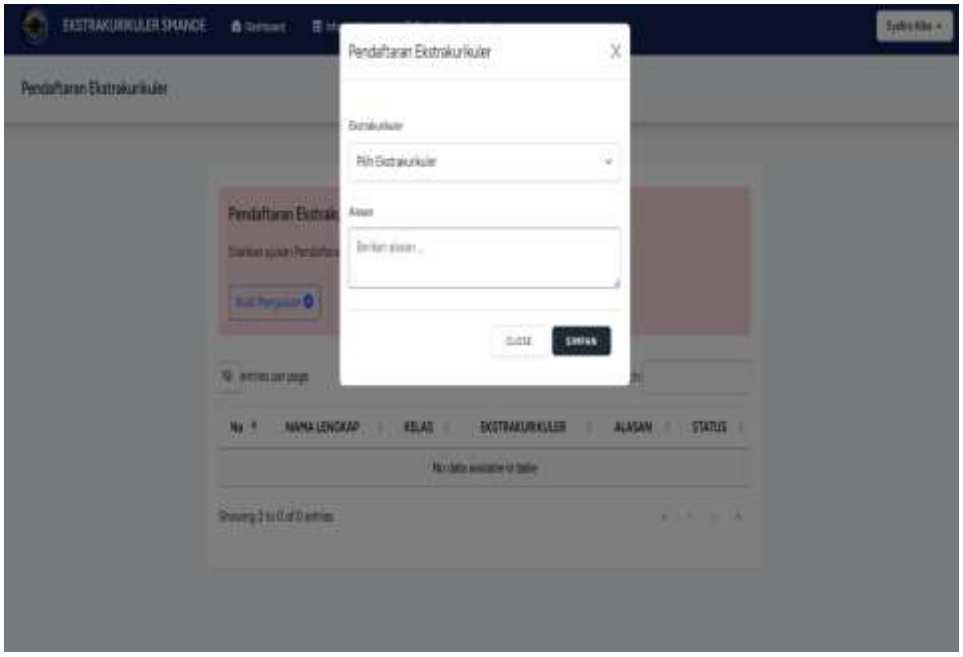

Figure 4. Extracurricular Member Registration

b) Member Presence Interface

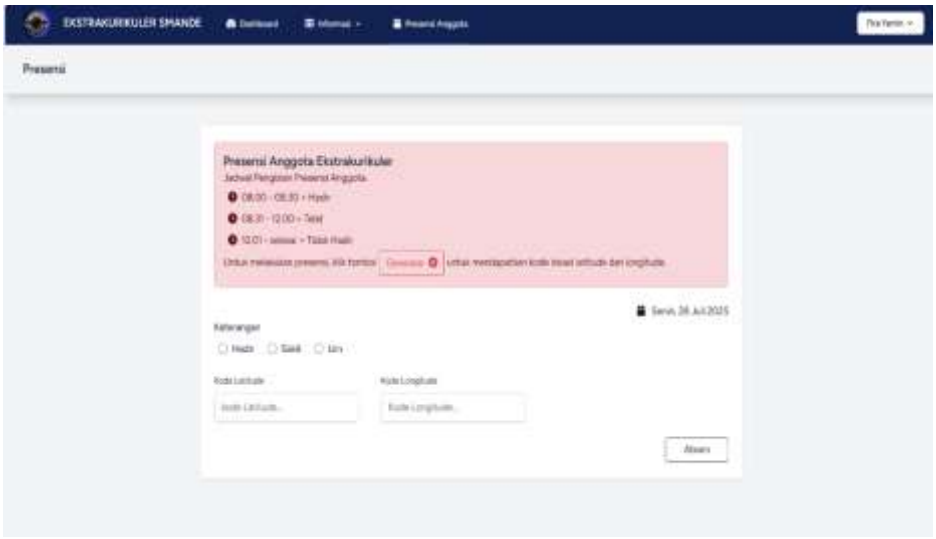

Figure 5. Member Presence

c) Extracurricular Schedule Interface

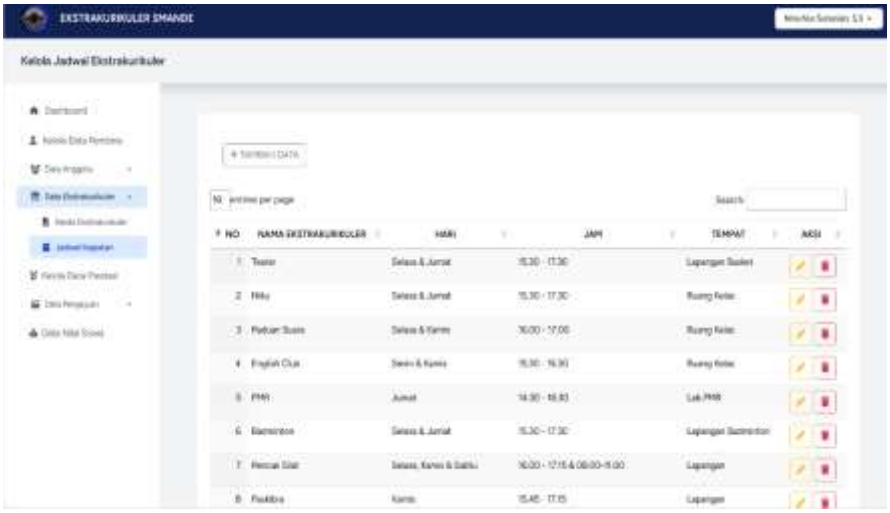

Figure 6. Extracurricular Schedule

d) Dispensation Letter Interface

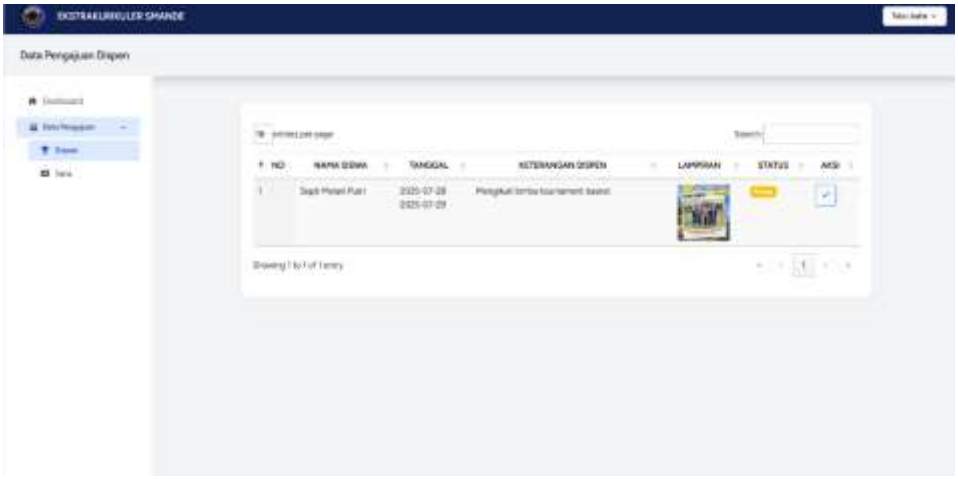

Figure 7. Manage Dispensation Letters

e) Activity Fund Submission Interface

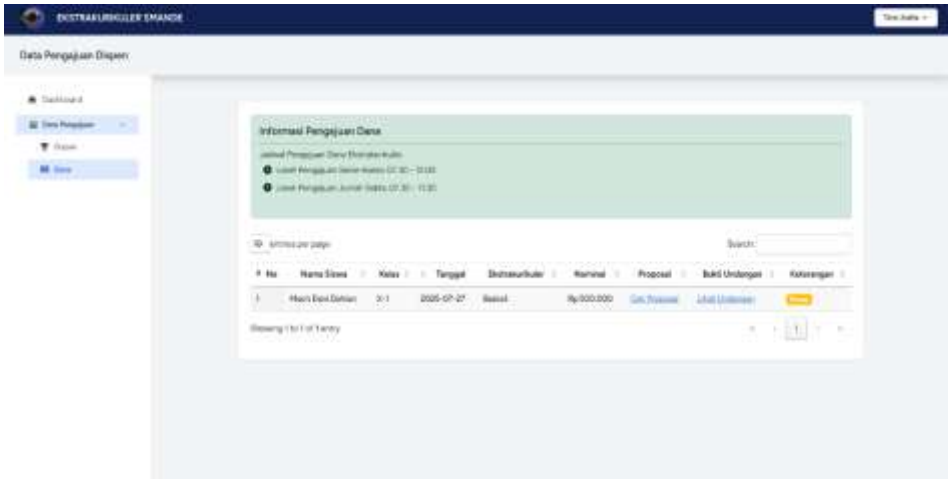

Figure 8. Submission of Activity Funds

3.4 Limitations of the Study

In the study on the Web-Based Extracurricular Activity Management Information System (Case Study: SMA Negeri 1 Mande), one of the challenges encountered was the difficulty in collecting requirement data from the school. This issue arose due to scheduling conflicts between the researcher and the school staff, which resulted in delays in the data collection process.

Nevertheless, the research findings indicate a significant improvement in the efficiency of extracurricular activity management following the implementation of the web-based system. Based on a comparative analysis between the manual and computerized systems, it was found that the web-based system accelerated the new member registration process by up to 60% and attendance recording by 50% compared to the manual method. In addition, the implementation of the computerized system helped reduce data entry errors, speed up data retrieval, and enhance the accuracy of reporting and coordination between supervisors and extracurricular members.

Conclusion

Based on the findings of the research titled *"Information System for Extracurricular Activity Management"*, several key conclusions can be drawn as follows:

1) The Information System for Managing Extracurricular Activities at SMA Negeri 1 Mande has been successfully developed and implemented.
2) The research limited the system testing to a single case study conducted at SMA Negeri 1 Mande
3) The system simplifies the process of submitting permission letters, which was previously done manually and can now be submitted digitally via the website.
4) The system helps reduce the risk of errors in member data input and in the scheduling of extracurricular activities.
5) The system allows for more structured and centralized management of information related to activity and competition schedules.
6) The system assists in managing budget planning to support the implementation of each extracurricular activity.
7) Through this system, students can communicate directly with extracurricular supervisors via a built-in chat feature, which is also equipped with notifications to facilitate easier interaction and discussion.
8) The system helps prevent the loss of extracurricular activity data by storing it securely and in a structured manner within a database.

9) Moving forward, the system can be expanded into an Android application with cloud integration features.
10) This system has the potential to be adopted and implemented in other schools beyond SMP Negeri 1 Mande in the future.

Acknowledgment

The successful completion and implementation of this research would not have been possible without the support and facilities provided by the Faculty of Engineering at Suryakancana University, as well as the assistance in data collection and interviews from the staff of SMA Negeri 1 Mande. Therefore, the researcher would like to express the deepest gratitude for all the help and support received

Declarations

The author served as the primary researcher in the study titled *Web-Based Extracurricular Activity Management Information System* (Case Study: SMA Negeri 1 Mande). This research was successfully carried out with the support of a grant from the Faculty of Engineering, Universitas Suryakancana, as stipulated in the Dean's Decree of the Faculty of Engineering, Universitas Suryakancana, Number: 169/SK/FT-D/UNSUR/V/2025, concerning the Grant Awardees for Faculty of Engineering Lecturers in 2025. Throughout the research process, fortunately, no conflicts of interest were encountered, and the study proceeded smoothly with the team working cohesively, each fulfilling their respective roles and responsibilities.

Data and Software Availability Statements

Software analysis aims to identify the necessary software required by the computer to ensure the system operates effectively. The following are the software specifications needed to support the Extracurricular Application:

a. XAMPP: A software package that provides a local server environment to support the development of web-based applications.
b. Visual Studio Code: An advanced text editor used for writing, editing, and debugging application source code.
c. MySQL: A relational database management system used to store, manage, and access application data.
d. Browser: Software used to access web pages and display information from the internet as needed.
e. Visual Paradigm: A modeling software utilized to design the system's structure and workflow visually.

References

[1] K. P. Zuhroh and R. Darni, "Perancangan Sistem Informasi Manajemen dan Ekstrakurikuler SMAN 1 Kota Solok," *Pendidikan Tambusai*, vol. 6, no. 2, pp. 12769–12779, 2022.

[2] E. W. Fridayanthie, H. Haryanto, M. N. Susila, and S. Ramadhan, "Sistem Informasi Manajemen Ekstrakurikuler (SIEKSTRA)," *Swabumi*, vol. 12, no. 1, pp. 72–77, 2024, doi: 10.31294/swabumi.v12i1.20124.

[3] H. Nuryansyah and E. Hermawan, "Perancangan Sistem Informasi Manajemen Ekstrakurikuler Berbasis Web Pada Sekolah Menengah Kejuruan Negeri 5 Kota Bandung," *Jurnal Sisfokom (Sistem Informasi dan Komputer)*, vol. 10, no. 3, pp. 298–305, 2021, doi: 10.32736/sisfokom.v10i3.1199.

[4] S. Iskandar, P. Solihah Rosmana, L. Nabilah, F. Dwi Nur, and P. Studi Pendidikan Guru Sekolah Dasar, "Pengembangan Ekstrakurikuler sebagai Sarana Mengembngkan Potensi Siswa Sekolah Dasar."

[5] M. F. R. Kamil, B. Rahmat, and Osphanie Mentari Primadianti, "Perancangan Dan Implementasi Web Server Untuk Pemantauan Kualitas Air Berbasis Iot," *e-Proceeding of Engineering*, vol. 8, no. 6, pp. 3515–3522, 2022.

[6] E. P. Primawanti, H. Ali, and K. Penulis, "PENGARUH TEKNOLOGI INFORMASI, SISTEM INFORMASI BERBASIS WEB DAN KNOWLEDGE MANAGEMENT TERHADAP KINERJA KARYAWAN (LITERATURE REVIEW EXECUTIVE SUPPORT SISTEM (ESS) FOR BUSINESS)," vol. 3, no. 3, 2022, doi: 10.31933/jemsi.v3i3.

[7] S. Sallu, Y. Harsono, and O. Fajarianto, "Implementation of Waterfall Method in Model Development to Improve Learning Quality of Computer Network Courses," vol. 25, no. 3, pp. 496–513, 2023, doi: 10.21009/JTP2001.6.

[8] R. S. Pressman, *Rekayasa Perangkat Lunak: Pendekatan Praktisi Buku I*. Yogyakarta: Andi, 2015.

[9] J. Milne, E. Heinrich, and D. Morrison, "Technological support for assignment assessment: A New Zealand higher education survey," *Australasian Journal of Educational Technology*, vol. 24, no. 5, pp. 487–504, 2008, doi: 10.14742/ajet.1187.

[10] Ihramsyah, Verdi. Yasin, and Johan, "Perancangan Aplikasi Sistem Informasi Penjualan Makanan Cepat Saji Berbasis Web Studi Kasus Kedai Cheese.Box," *Jurnal Widya*, vol. 4, no. 1, pp. 117–139, 2023.

[11] Mohammad Hiqmal Fiqri, Wawan Joko Pranoto, Bayu Gaung Oktio Putra, Muhammad Nur Irvan, and Wahyu Laksana, "Penerapan Sistem Manajemen Rekam Web pada DPMPTSP Kota Samarinda dengan Menggunakan Framework Laravel," *Jurnal Publikasi Teknik Informatika*, vol. 3, no. 1, pp. 01–12, 2023, doi: 10.55606/jupti.v3i1.2448.

[12] M. S. Novendri, A. Saputra, and C. E. Firman, "Aplikasi Inventaris Barang Pada MTS Nurul Islam Dumai Menggunakan PHP Dan MySQL," *Lentera Dumai*, vol. 10, no. 2, pp. 46–57, 2019.

[13] S. Suhartini, M. Sadali, and Y. K. Putra, "Sistem Informasi Berbasis Web Sma Al- Mukhtariyah Mamben Lauk Berbasis Php Dan Mysql Dengan Framework Codeigniter," *Infotek: Jurnal Informatika dan Teknologi*, vol. 3, no. 1, pp. 79–83, 2020, doi: 10.29408/jit.v3i1.1793.

[14] R. R. N. Fikri, A. Rahardi, and I. Agus, "Pengujian Blackbox pada Sistem Informasi Komunitas Pecinta Kucing di Bandar Lampung," *Jurnal Teknika*, vol. 18, no. x, pp. 25–34, 2024.

[15] C. R. Mohan Reddy, E. Geetha, Srinivasa, Suresh Kumar, and Rajani Kanth, "Early performance prediction of web services," *International Journal on Web Service Computing*, vol. 2, no. 3, pp. 31–41, Sep. 2011, doi: 10.5121/ijwsc.2011.2303.